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10/092,517	03/08/2002	Takafumi Noguchi	Q66506	3791

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/092,517	NOGUCHI, TAKAFUMI	
	Examiner	Art Unit	
	Hung H. Lam	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendments, filed on 02/09/07, have been entered and made of record. Claims 14-18 are added. Claims 1-18 are pending.

Response to Arguments

2. Applicant's arguments filed 02/09/07 have been fully considered but they are not persuasive.

Applicants representatives seem to argue that two cited references are not in the same field of endeavor wherein Konishi is related to a still image and that Nishiyama color separation and noise removal processing are related to a moving picture. The examiner respectfully disagrees because both references are indeed in the same field of endeavor of image signal processing, which typically utilizes a noise reduction technique to achieve better signal quality for the image. Furthermore, Nishiyama was cited to illustrate the general concept of noise reduction in color separation and not how the noise reduction process is done (Nishiyama: abstract; Figs. 1 and 6: color signal processing circuit 5; Col. 4, Ln. 28-30; Col. 6, Ln. 33-Ln. 41). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Konishi's teaching of color separation and Nishiyama's teaching of the concept noise reduction in color separation to achieve clearer image quality.

The Applicants representatives further argue that the fact still remains when increasing or decreasing the intensity of said color separating process, an occurrence of noise generation is increased and this fact is contrary to the recitation of claims 1and 4. The Examiner respectfully disagrees. The Examiner interprets the color signal processing circuit 5 (Fig. 6) of Nishiyam as a whole unit, which not only performs color separation/difference but also performs noise remove (abstract; Figs. 1 and 6: color signal processing circuit 5; Col. 4, Ln. 28-30; Col. 6, Ln. 33-Ln. 41; Col. 7, Ln. 18- Col. 8, Ln. 51). Therefore, during the time signal supplied by Flicker Correction Circuit 403 (Fig. 2) pass through color signal processor 5 (Fig. 6), the color separation and noise removal process are performed and thereby meeting the limitation recited in claims 1 and 4.

In view of the above, the Examiner believes that the broadest interpretation of the present claimed invention does in fact read on the cited reference for at least the reasons discussed above and as stated in the detail Office Action as follows. This Office Action is now made final.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inai et al. (US-4,437,111) in view of Konishi (US-4,774,564) and further in view of Nishiyama (US-5,293,225).

Regarding **claim 1**, Inai et al. disclose an image capturing method in which an image of a subject is captured by an image capturing device using image capturing optics (Fig. 3, optical lens 1-4; col. 2, lines 22-28) and an image capturing signal from said image capturing device (5) is subjected to specified processing schemes including a color separating process (Fig. 3, Y color separator process 7-11; col. 2, lines 39-51), thereby producing an image signal, said method comprising the steps of:

determining whether sensitivity of said image capturing device is insufficient or not during image capturing (Fig. 3, brightness detector 13, brightness determining circuit 14; col. 2, lines 51-67);

when the sensitivity of said image capturing device is insufficient, relatively increasing at least one of an overlapping region of spectral sensitivity of said image capturing device (col. 4, lines 50-61; when brightness is below the set level, infrared filter is removed to increase the sensitivity of the pickup-tube);

when the sensitivity of said image capturing device is sufficient, relatively decreasing at least one of the overlapping region of the spectral sensitivity of said image capturing device (col. 4, lines 38-49; when brightness is above the set level, infrared filter is inserted to decrease the sensitivity of the pickup-tube).

However, Inai et al. fail to disclose that when the brightness is below or above the set level, the corresponding intensity of color separating process is increased or decreased.

In the same field of endeavor, Konishi teaches an electronic still camera wherein the intensity of the RGB/color separating process is set to a predetermined level if it is possible (Figs. 6 and 7) or disengaged and continued in manual mode (col. 13, lines 47-53). Konishi

further teaches that the gains of the G and B signals of the color separating process are increased when color temperature detects low light; otherwise, the system is disengaged to complete the photographing in manual mode (col. 13, lines 30-55). In addition, Konishi teaches that the gain of the color separation and gain adjustment unit 50 are adjusted on the basis of the color temperature data obtained by color temperature sensor 78 and the incident light volume or quantity from the scene obtained from photosensitive device 36 (Konishi: Col. 11, Ln. 28-42; it is noted that by adjusting the gain, the intensity of the color separation unit must be increased or decreased. Also on the basis of information sent by the color temperature sensor 78 and sensor 36, the main control 58 must determine the sufficiency / insufficiency of the sensitivity of the image capturing device for adjusting the gain of the color separation unit 50 accordingly). In light of the teaching from Konishi, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Inai to increase or decrease the gain (intensity) of the color separating process as taught by Konishi and thus controlling the gain-variable of the color separation in accordance to the data obtained by the color temperature sensor/ photo sensitive device (Konishi, col. 3, lines 47-53).

However, Inai in view of Konishi fails to disclose wherein, when relatively increasing or decreasing the intensity of said color separating process, an occurrence of noise generation is not thereby increased during color separation.

In the same field of endeavor, Nishiyama teaches a color processing circuit, which separates color component from multiplexed signal (abstract; Figs. 1 and 6: color signal processing circuit 5; Col. 4, Ln. 28-30; Col. 6, Ln. 33-Ln. 41). Nishiyama further teaches that the color processing circuit not only caries color separation process, but carries out noise removal

processing operation (abstract; Col. 7, Ln. 18- Col. 8, Ln. 51. Therefore, regardless of the changes of light intensity in Inai and Konishi references, noised occurrences are not increased during color separation process). In light of the teaching from Nishiyama, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Inai and Konishi to include a color processing circuit as taught by Nishiyama in order to perform noise removal operation and color separation process. The modifications thus provide clean color-separation out-put signals regardless of input signals.

Regarding **claim 2**, Inai in view of Konishi and further in view of Nishiyama discloses the image capturing method wherein the overlapping region of the spectral sensitivity of said image capturing device is an infrared region (Inai, Fig. 3, Infrared Filter 3; col. 3, lines 1-12; the spectral sensitivity of the image capturing device is adjusted by inserting or removing the infrared filter).

Regarding **claim 3**, Inai in view of Konishi and further in view of Nishiyama fails to explicitly disclose that the color separating process is an under color removal scheme.

Official Notice is taken that it is well known and expected in the art that a color separating default condition includes a color removal process. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was to modify the device of Inai, Konishi and Nishiyama to include an under color removal scheme in a color separating process in order to secure gradation and eliminate mosquito noise generation. The modifications thus provide better image-data.

Regarding **claim 4**, all limitations are contained in claim 1. See the rejection of claim 1 above.

Regarding **claim 5**, all limitations are contained in claim 2. See the rejection of claim 2 above.

Regarding **claim 6**, all limitations are contained in claim 3. See the rejection of claim 3 above.

Regarding **claim 7**, Inai in view of Konishi and further in view of Nishiyama discloses the image capturing apparatus, wherein after the image capturing device (Konishi: Fig. 1; CCD 22) captures the image of a subject the image is converted to exposure data and the exposure data is subjected to color separation (Konishi: see Fig. 1; CCD 22 inherently captures an image and converts the exposure data to RGB signal which is then sent and subjected to the color separation unit 50).

Regarding **claims 8 and 9**, all limitations are contained in claim 1. See the rejection of claim 1 above.

Regarding **claim 10**, Inai in view of Konishi and further in view of Nishiyama discloses the image capturing apparatus, wherein said device for producing the image signal by performing specified processing schemes does not generate noise (Nishiyama: abstract; Col. 7, Ln. 18- Col. 8, Ln. 51).

Regarding **claim 11,** Inai in view of Konishi and further in view of Nishiyama discloses the image capturing apparatus wherein said image capturing apparatus (Konishi: see the camera in Fig. 1) comprises a device (Konishi: Fig. 3; AE control 66 and shutter drive 40) for maintaining a consistent aperture (Konishi: Fig. 3; Col. 6, Ln. 66 - Col. 7, Ln. 7-18; AE control 66 inherently controls a consistent aperture in accordance with a light intensity measured at the photosensitive element 36).

Regarding **claim 12** Inai in view of Konishi and further in view of Nishiyama discloses the image capturing apparatus, wherein said image capturing apparatus comprises a device (Konishi: Fig. 3; AE control 66 and diaphragm drive 28) for maintaining a consistent shutter speed (Konishi: Fig. 3; Col. 7, Ln. 7-18; AE control 66 inherently controls a consistent shutter / diaphragm speed in accordance with a light intensity measured at the photosensitive element 36).

Regarding **claim 13,** Inai in view of Konishi and further in view of Nishiyama discloses the image capturing apparatus wherein said sensitivity is based on a spectral response of said image capturing device (see Inai: Col. 1, Ln. 10-22 wherein the sensitivity spectrum of recent high sensitivity image pickup devices have considerable sensitivities in the infrared range of about 700-830 nm as shown in Fig. 1; see Col. 2, Ln. 50- Col. 3, Ln. 11 wherein the infrared filter is inserted to delete infrared component on the basic of a predetermined high brightness level which the sensitivity spectrum of curve b, c and d in Fig. 1 approaches the cutoff maximum sensitivity uA/uW).

Regarding **claim 14,** Inai in view of Konishi and further in view of Nishiyama discloses the image capturing method wherein the process of increasing the intensity itself does not increase the occurrence of noise (Nishiyama: abstract; Figs. 1 and 6: color signal processing circuit 5; Col. 4, Ln. 28-30; Col. 6, Ln. 33-Ln. 41; Col. 7, Ln. 18- Col. 8, Ln. 51).

Regarding **claim 16,** Inai in view of Konishi and further in view of Nishiyama discloses the image capturing method further comprising capturing a still image (Konishi: abstract; Col. 3, Ln. 61-Col. 4, Ln. 58; Col. 9, Ln. 1-18).

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inai et al. in view of Konishi, in view of Nishiyama and further in view of Nagata (US-5,091,743).

Regarding **claim 15,** Inai in view of Konishi and further in view of Nishiyama fails to explicitly disclose the image capturing method wherein amplification is not required to increase the intensity of said color separating process.

In the same field of endeavor, Nagata teaches an imaging device wherein a yellow color intensity is intended to be increased by plus one level, a yellow filter insertion amount L1 is increased by "1". If a red color intensity is intended to be increased by plus two level, insertion amount L1 and L2 of a red color filter and magenta filters are respectively increased by "1 (Col. 17, Ln. 64 - Col. 18, Ln. 17). In light of the teaching from Nagata, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Inai, Konishi and Nishiyama to include a color filter insertion circuit as taught by Nagata in order to

increase the color intensity. The modifications thus provide an alternative method of increasing color intensity and reduce power consumption.

6. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inai et al. in view of Konishi, in view of Nishiyama and further in view of Kubo (US-7,057,653).

Regarding **claim 17,** Inai in view of Konishi and further in view of Nishiyama fails to discloses the image capturing method, further comprising:

converting the image capturing signal into exposure data; and

adjusting the coefficients of the exposure data to perform said color separating process,

In the same field of endeavor, Kubo teaches an imaging device having an image processing (Fig. 2; 12); wherein a pixel interpolation section (13) of the image processing (12) is subjected to a masking process on an image data (31; image data 31 is interpreted as exposure data) according to different filter patterns so that every one of R, G and B pixels are separated into color data 32, 34 and 36 (Figs. 2, 7-9; Col. 10, Ln. 53-Col. 11, Ln. 32; the masking and interpolation process in the interpolation section 13 inherently manipulate or adjust the exposure data in order to provide separate colors output 33, 35 and 37 as shown in Fig. 7). Kubo further teaches that the RGB pixel interpolation process speed "a", "b" and "c" can be set in according with capture image size and image compression mode (Col. 12, Ln. 15-55). Kubo teaches that by improving the image processing speed with regarding, in particular, to image capturing attaching less importance to the image quality, an increased number of image frames can be captured per unit time (Col. 12, Ln. 57-60). In light of the teaching from Kubo, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to modify the device of Inai, Konishi and Nishiyama to include the image processing of Kubo in order to perform a masking process so as to separate every one of R, G and B pixels into color data 32, 34 and 36. The modifications thus provide a variety of interpolation speed and increase the number of image frames captured per unit time (Kubo: Col. 12, Ln. 31-60).

Regarding **claim 18,** Inai in view of Konishi and further in view of Nishiyama fails to disclose the image capturing method, wherein the color separating process is a masking process.

In the same field of endeavor, Kubo teaches an imaging device having an image processing (Fig. 2; 12); wherein a pixel interpolation section (13) of the image processing (12) is subjected to a masking process on an image data (31; image data 31 is interpreted as exposure data) according to different filter patterns so that every one of R, G and B pixels are separated into color data 32, 34 and 36 (Figs. 2, 7-9; Col. 10, Ln. 53-Col. 11, Ln. 32). Kubo further teaches that the RGB pixel interpolation process speed "a", "b" and "c" can be set in according with capture image size and image compression mode (Col. 12, Ln. 15-55). Kubo teaches that by improving the image processing speed with regarding, in particular, to image capturing attaching less importance to the image quality, an increased number of image frames can be captured per unit time (Col. 12, Ln. 57-60). In light of the teaching from Kubo, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Inai, Konishi and Nishiyama to include the image processing of Kubo in order to perform a masking process so as to separate every one of R, G and B pixels into color data 32, 34 and 36. The

modifications thus provide a variety of interpolation speed and increase the number of image frames captured per unit time (Kubo: Col. 12, Ln. 31-60).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Krauter (US-6,147,705) discloses an electronic filter/variable resistors circuit, which intensifies the intensity of an imaged subject.

b) Safai (US-6,642,956) discloses that intensity of incoming light at one specific primary color is determined by color filters.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung H. Lam whose telephone number is 571-272-7367. The examiner can normally be reached on Monday - Friday 8AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SRIVASTAVA VIVEK can be reached on 571-272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HL
04/23/07

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